

Unit 2 Linear Motion

Linear Motion Notes

Linear Motion – motion in a straight line

Motion is relative

Examples:

1. Even when you are sitting, you are traveling through space.
2. The train is leaving the station, or is the station leaving the train?
3. If you are driving in a car and throw a ball, how fast is the ball moving?

***We usually describe motion relative to _____
_____.

Speed- _____ covered divided by the _____
it takes.

***Does not include a direction

Example: If you are running 10 miles/hour but do not tell what direction.

Speed = Distance / Time

Examples:

Two ways to measure speed:

1. Instantaneous Speed – speed at any given instant

Example: reading your speedometer in the car

2. Average Speed – total distance / total time

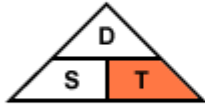
Velocity – speed with a _____

Example: a car traveling 55 mi/hr heading north

_____ - going in a straight line at the same speed.



$$\text{Distance} = \text{Speed} \times \text{Time}$$



$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$



$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

Practice Problems:

Dodge City is 50 miles away. If it takes you 1.25 hours to get there, what is your average speed?

You are running a race that is 1600 meters. If it takes you 5 minutes to finish, what was your average speed?
(put answer in m/s)

You are walking to the mall from your house. The mall is 2.5 miles away and takes you 30 minutes to get there. What is your average velocity? (put answer in mi/hr)

You are flying from New York City to Los Angeles. The two cities are 4500 km apart, and it takes you 5.5 hours to fly there. What is your average speed?